




Do pregnant women prepare and be ready for birth and its complications?

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Citation: Awang Muda NA, Badrin S, Badrin S. Do pregnant women prepare and be ready for birth and its complications?. *Electron J Gen Med.* 2023;20(1):em427. <https://doi.org/10.29333/ejgm/12593>

ARTICLE INFO

Received: 12 Jun. 2022

Accepted: 15 Oct. 2022

ABSTRACT

Background: Every pregnancy faces unpredictable complications and risks associated with the risk of maternal morbidity, mortality, and neonatal complications. The aim of the study is to determine birth preparedness and complication readiness (BPCR) among antenatal women and their determinants.

Methods: The involved a total of 100 pregnant women at a public university hospital in Kelantan state, Malaysia. A self-administered questionnaire was used for data collection.

Results: A total of 47.0% of participants were well prepared for their birth and its complications. There were no associations between being well prepared for birth and its complications with parity, gestational age, the total number of antenatal visits, or other sociodemographic data.

Conclusion: BPCR among women were still low among women in Kelantan. Knowledge of the danger signs during pregnancy, labor, and the postnatal period among pregnant women is important to reduce maternal mortality.

Keywords: birth, complication, pregnant, readiness, preparedness

INTRODUCTION

Pregnancy will cause minor changes to a woman's physical and emotional health. Every pregnancy entails the potential of unforeseen difficulties, which could lead to harm or, in the worst situations, the mother or the child's death [1]. The maternal mortality rate will increase if a mother dies because of pregnancy difficulties during antenatal care, childbirth, or after delivery [2]. Obstetric fatalities are the most common cause of maternal deaths, however other medical disorders in the mother can also contribute to maternal deaths [3]. In fact, around 80% of maternal deaths are caused by direct obstetric problems, including bleeding, infection, obstructed and protracted labor, botched abortion, and hypertension throughout pregnancy [4].

Every pregnancy demands, and is entitled to, the proper care and labor preparation. Complications, morbidities, and even maternal death can be decreased when there are experienced delivery attendants present. Increased knowledge of labor preparation and complications among expectant mothers, their partners, and their families is linked to an increase in maternal and newborn morbidity and death [5] or pregnant women and their families to be aware of and ready for pregnancy's potential implications before and during pregnancy, it is essential to have a greater awareness of birth preparedness and complication readiness (BPCR). If fundamental maternity care is given promptly and the issue is

discovered early in the family, maternal death and morbidity can be prevented.

Birth preparation and complications is one of the inclusive techniques meant to encourage timely access to expert maternal and neonatal health services during labor or obstetric crises [6, 7]. By finding a skilled birth attendant, family support, saving money and arranging transportation, finding health facilities, and finding matching blood donors, when necessary, in such circumstances, it decreases delays in receiving care during labor or obstetric crises [7]. According to the World Health Organization, between 1990 and 2015, the maternity mortality ratio (MMR) worldwide decreased by 44% [8]. Maternal health improvement is one of the millennium development goals, which were formally introduced in September 2000 and ratified by 189 countries, including Malaysia. Since 2000 to 2015, Malaysia has maintained low MMR [9].

Even though Malaysia still maintains low rate of maternal mortality, the preparedness for birth and its complications is still important to assess especially during the pandemic COVID-19 when the access to the health service center facilities are limited due to the pandemic and thus, the empowerment of pregnant women through their knowledge is crucial to detect the danger signs of pregnancy to avoid the maternal morbidity and mortality [10]. This study was conducted to determine BPCR among the pregnant women and its association with parity, frequency of antenatal visits and their trimester.

METHODS

Cross-sectional research methodology was used in the study. The convenience sampling approach was employed for this study. During the months of January and February 2019, pregnant women who attended an antenatal clinic at a public university hospital in the state of Kelantan, Malaysia, were invited to take part in this study. Pregnant women who had attended at least two antenatal clinic appointments and were literate in English or Malay were included in the study. Those who had any mental or psychiatric illnesses were excluded. The sample size was calculated using two proportions formulas, and parity was used as a factor in the comparison. The calculated sample size was 120, based on a 95% confidence level, an 80% power, a 46% of birth preparedness in high parity women and a 27.1% in low parity women in the previous study [8], and a 20% non-response rate. The study was given approval by the Human Research Ethics Committee, and the director of Hospital Universiti Sains Malaysia obtained and gave authorization for data collection in the prenatal clinic. It was agreed upon by 120 individuals to participate in the study, and questionnaires were provided to them to complete. But only 100 of the 120 questionnaires had their replies filled out and returned to the researcher. Thus, the response rate was 83.3%.

The Johns Hopkins program for international education in gynecology and obstetrics (JHPIEGO) safe motherhood committees established a tool and indicators for maternal and newborn health, from which the study's questionnaire was derived (JHPIEGO, 2004). The JHPIEGO instruments for evaluating BPCR were applied in this study. The questionnaire tool was initially only offered in English. A bilingual specialist from the School of Languages, Literacies, and Translation has translated and reviewed a Malay pre-tested questionnaire. Pilot study was carried out in 10% of the expectant mothers in the prenatal ward, a population distinct from the study sample population, to evaluate the face validity and reliability of the questionnaire. Cronbach's alpha for the Malay version of the BPCR questionnaire was 0.72.

There were four sections to the questionnaire: age, marital status, level of education, work, and household income are the sociodemographic details which in the section A. Information on obstetric characteristic, including parity, gestation trimester, and prenatal visits, is provided in section B. The JHPIEGO tools' level of BPCR are assessed in section C and section D. Five questions were included in the BPCR questionnaire to gauge the level of birth preparation, and two more verbal questions were used to gauge complication readiness. The five elements of birth preparation are choosing the birth location, confirming the presence of a trained birth attendant, choosing a method of transportation before giving birth, setting aside money for the birth, and designating a prospective person in case of an obstetric emergency. Answers to all questions must be "yes" or "no." Two additional questions that were verbally led by researchers were used to gauge complication preparation. The complication readiness questions evaluated the understanding of warning signs during the various stages of pregnancy, labor and delivery, and the postpartum period. A minimum of two danger indications must be recognized by participants for each phase. Participants were categorized as "well prepared" if they could correctly answer "yes" to three out of five questions about birth preparation and could recognise at least two risk signs during

Table 1. Socio-demographic data and obstetric characteristics of participants (n=100)

Variables	n	%
Age (years)		
20-30	51	51.0
31-40	46	46.0
41-50	3	3.0
Marital status		
Married	97	100.0
Widow/divorced	3	3.0
Educational status		
Primary	0	0.0
Secondary	54	54.0
Tertiary	46	46.0
Occupation		
Working	41	41.0
Unemployed/student/housewives	59	59.0
Education status of the spouse		
Primary	3	3.0
Secondary	58	58.0
Tertiary	39	39.0
Occupation of the spouse		
Employed	98	98.0
Student	2	2.0
Household income per month		
<RM1,000	15	15.0
RM1,001-2,000	28	28.0
RM2,001-3,000	18	18.0
RM3,001-4,000	10	10.0
RM4,001-5,000	13	13.0
RM5,001-6,000	6	6.0
>RM6,000	10	10.0
Parity		
0 (primigravida)	31	31.0
1-4	59	59.0
>5	10	10.0
Trimester		
2 nd trimester	4	4.0
3 rd trimester	96	96.0
Total antenatal visit		
2 times	19	19.0
3-4 times	11	11.0
>5 times	70	70.0

pregnancy, labor, and postpartum. The participants were given a self-administered questionnaire, which took about 15 minutes to complete all four sections: sections A, B, C, and D. The statistical package for social science version 24.0 for Windows was used to analyze the data. Data was screened and checked for accuracy, inconsistencies, and errors. Data on sociodemographic and obstetric characteristics were analyzed using descriptive statistics. To find the association between BPCR levels and the chosen socio-demographic and obstetric parameters, Pearson Chi-square tests were performed.

RESULTS

Table 1 displays the sociodemographic information and obstetric characteristics of the participants. The study included 100 participants. Most of the participants were multiparous (one-four children), unemployed, and in their third trimester of pregnancy.

Identifying a location for delivery or an emergency, locating a skilled birth attendant, saving money for delivery, arranging mode of transportation prior to birth, and designating a person

Table 2. Birth preparedness among participants

Characteristics	n	%
Plans for place of birth		
Yes	85	85.0
No	15	15.0
Identify the presence of skilled birth attendant		
Yes	82	82.0
No	18	18.0
Save money for birth		
Yes	85	85.0
No	15	15.0
Arrange mode of transportation prior to birth		
Yes	95	95.0
No	5	5.0
Designate the potential person during obstetric emergency		
Yes	37	37.0
No	63	63.0
Number of steps taken		
0	3	3.0
1	2	2.0
2	7	7.0
3	19	19.0
4	37	37.0
5	32	32.0
At least three steps taken		
Yes	88	88.0
No	12	12.0

Table 3. Complication readiness among participant (n=100)

Characteristics	n	%
Detect early signs of an emergency condition during pregnancy		
Yes	91	91.0
No	9	9.0
Detect at least 2 danger signs during pregnancy	80	80.0
Detect early signs of an emergency condition during labor/childbirth		
Yes	76	76.0
No	24	24.0
Detect at least 2 danger signs during labor	55	55.0
Detect early signs of an emergency condition during postnatal		
Yes	77	77.0
No	23	23.0
Detect at least 2 danger signs during postnatal	59	59.0
Detect at least 2 danger signs during pregnancy, labor, & postnatal		
Yes	48	48.0
No	52	52.0

during an obstetric emergency are the five key steps in birth preparation. A total of 88% of the participants had completed at least three steps in their birth preparation. In this study, only three participants failed to identify all steps of birth preparation. Most participants had planned the location of the delivery, identified the presence of a skilled birth attendant, saved money for the birth, and arranged the mode of transportation for the birth.

According to **Table 2**, 63% of participants did not designate a potential helper in the event of an obstetric emergency.

Complication readiness among participants as seen in **Table 3**. 91% of them mentioned they could detect it. Following that, 76% said they were aware of danger signs during labor, and 77% said they could spot them during the postpartum period. When mothers recognized at least two risk indications for each of the three phases (antenatal, labor, and postnatal), they are categorized as complications ready. Only 48% of participants in this study were able to list at least two signals for each phase. The birth readiness component of the

Table 4. Obstetric danger signs reported among participants

Key obstetric danger signs	n
Danger sign during pregnancy	
Bleeding	81
Water breaking before labor	55
Reduce fetal movement	54
Severe abdominal pain	53
Difficulty in breathing	22
High fever	20
Convulsion	16
Severe weakness	16
Severe headache	16
Loss of consciousness	15
Blurring of vision	14
Hand and face swelling	11
Danger sign during labor	
Severe bleeding	75
Placenta not delivered after 30 minutes	42
Labor process lasting >12 hours	28
Loss of consciousness	33
High fever	13
Convulsion	19
Severe headache	9
Danger sign during postnatal	
Bleeding	70
Abnormal vagina discharge	41
Difficulty breathing	34
Severe fatigue	29
High fever	21
Convulsion	21
Blurred vision	11
Severe headache	17
Swelling of hand and face	8

BPCR was complete if the mother could complete three stages and identify at least two danger signs in those three phases. According to the BPCR criteria, 47% of participants were “well prepared,” while 53% were “unprepared” in this study.

The participants reported all obstetric danger signs, as shown in **Table 4**. The participants’ highest risk sign was bleeding during antenatal, labor, and postnatal periods. The Pearson Chi-square and Fisher exact tests were used to determine the relationship between BPCR and the selected obstetric characteristics, such as parity, total antenatal visits, and gestational age.

As shown in **Table 5**, there were no significant associations between BPCR and obstetric characteristics such as parity ($p=0.793$), total antenatal visits ($p=0.260$), and gestational age ($p=1.000$). There was also no significant association between BPCR with socio-demographic data, including age ($p=1.000$), marital status ($p=0.245$), educational status ($p=0.422$), job status ($p=0.054$), husband’s education status ($p=0.052$) and occupation ($p=0.28$), and household income ($p=0.134$).

DISCUSSION

BPCR is one of the strategies for promoting safe motherhood for pregnant women in order to reduce maternal morbidity and mortality. It also aims to reduce delays in obtaining good care for both mothers and babies during the antenatal, labor, and postnatal phases of the pregnancy by being prepared for birth complications during these three stages of the pregnancy [11]. Pregnant women who prepared well for both birth and its complications performed below the

Table 5. Table on top of a page

Obstetric characteristic	Level of birth preparedness and complication readiness		χ^2 statistic (df)	p-value
	Unprepared [n (%)]	Well prepared [n (%)]		
Parity			0.46 (2)	0.79
0	13 (41.9)	18 (58.1)		
1-4	29 (49.2)	30 (50.8)		
>5	5 (50.0)	5 (50.0)		
Total antenatal visit				
2 times	12 (63.2)	7 (36.8)	2.70 (2)	0.26
3-4 times	4 (36.4)	7 (63.6)		
>5 times	31 (44.3)	39 (55.7)		
Trimester				1.00 ^a
2 nd trimester	2 (50.0)	2 (50.0)		
3 rd trimester	45 (45.1)	51 (50.9)		

Note. ^aFisher's exact test

expected level in our study. Most of them were prepared for birth, but not for the birth complications.

The majority of participants in this study chose government hospitals as their delivery location. The study findings were nearly identical to those of another study in which at least 83.1% of participants chose hospital over home and others [12]. Previous research has found that the higher percentage of home births is due to the mother's previous experience with normal delivery with short labor time at home, the health facilities are far from their home, and the financial constraints to delivering at the health facilities [13].

In Malaysia, the Ministry of Health emphasized hospital delivery with skilled birth attendants for all pregnant women. According to our findings, most pregnant women can detect the presence of skilled birth attendants. In our country, the personalized care concept for all pregnant mothers has been implemented, which may contribute to a higher percentage of mothers recognizing the presence of a skilled birth attender. Individual-focused or family-focused care is currently used in Malaysia to manage antenatal follow-up in community and primary care clinic settings [14]. During antenatal visits to the health clinic, pregnant women in the specific area will be seen by the same community nurses and doctors. This will allow pregnant women to identify specific health care personnel in the event of an obstetric emergency [14].

According to our findings, the total number of participants who were well-prepared and ready for their birth and its complications remained low. Our findings are similar to those of another study conducted among antenatal mothers attending an antenatal clinic at a tertiary care center, which discovered that nearly half of participants (41.1%) were well prepared for their birth and were prepared for birth complications [15]. In our study, a higher proportion of pregnant women did not designate a person to help during an obstetric emergency, which was similar to another study done in Ethiopia, where only 17% of pregnant women could identify a person to help during an obstetric emergency [16].

Lack of knowledge of pregnancy danger signs and inadequate awareness of birth complications may prevent pregnant women and their families from seeking help if the problem occurs during their pregnancy [17]. According to our findings, most pregnant women can recognize danger signs during pregnancy, labor, and postpartum, and they can name at least two danger signs for each stage of the pregnancy. The most often mentioned danger signs were bleeding during the antenatal, labor, and postnatal periods, followed by other danger signs such as decreased fetal movement, water break

without labor, and abdominal pain. In contrast to the other study conducted by Patil et al, decreased fetal movement is the most commonly mentioned danger sign, followed by abdominal pain and severe bleeding [18]. Another study found that the two most common danger signs mentioned by study participants were prolonged labor and retained placenta [13].

BPCR were found to be unrelated to the obstetric characteristics studied, including parity, total antenatal visits, and gestational age. In contrast, one study discovered a link between BPCR and parity [19]. When compared to primigravida, higher parity increases the level of BPCR for birth complications [19]. According to a previous study, antenatal services increase the opportunity for healthcare professionals to educate women about BPCR [2]. In the previous study, the number of antenatal visits was found to be associated with BPCR practice, and women who attended antenatal check-ups at least four times had a better level of birth preparedness and were ready for complications [17]. In the other studies, gestational age was found to be related to BPCR [16].

In conclusion, inadequate prenatal preparation and knowledge of birth complications may increase maternal morbidity and mortality. Unwanted delays in seeking treatment during an obstetric emergency can be avoided if the mother is well prepared for birth and the complications that may arise. Continuous effective education interventions, particularly during antenatal visits and among pregnant women with high-risk pregnancies, should be planned. When it comes to an emergency obstetric situation, well-prepared pregnant mothers are expected to make a better, more reasonable decision.

Author contributions: All authors have sufficiently contributed to the study and agreed with the results and conclusions.

Ethical statement: The authors stated that the study protocol was reviewed and approved by Human Research Ethics Committee of Universiti Sains Malaysia on January 19, 2019 with protocol code: USM/JEPeM/18110671.

Funding: No funding source is reported for this study.

Declaration of interest: No conflict of interest is declared by authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

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